



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/611,541	07/07/2000	James L. Fergason	VEIAP103USA	6778

7590 10/06/2003

Warren A Sklar  
Renner Otto Boisselle & Sklar LLP  
19th Floor  
1621 Euclid Avenue  
Cleveland, OH 44115

EXAMINER

LESPERANCE, JEAN E

ART UNIT	PAPER NUMBER
2674	14

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/611,541	FERGASON, JAMES L.
	Examiner Jean E Lesperance	Art Unit 2674

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 31 July 2003.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

4) Claim(s) 1-36,39,40 and 43-54 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-36,39,40 and 43-54 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Disposition of Claims**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 07 July 2000 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a)  The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.  
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)  
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_. 6) Other:

### DETAILED ACTION

1. Claims 1-36, 39, 40, and 43-54 are presented for examination.
2. The rejection of claims 19-21 under 35 U.S.C. 112, First paragraph is withdrawn as requested by the applicant.

#### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-10, 12, 13, 15-23, 27, 28, 31-36, 39, 40, and 43-54 are rejected under 35 U.S.C. 102 (e) as being unpatentable over U.S. Patent # 6,593,957 ("Christie").

As for claims 1, 31, and 34, Christie teaches a first and second images Fig. 1 (125r and 125l) corresponding to a pair of displays, polarizers (122r and 122l) corresponding to each having a polarized light output and it is inherent in the art for two identical displays to have the same polarization corresponding to the polarization direction for both displays being the same, the two image LCD being at 90 degrees to each other (see figure 1) corresponding to the displays being at an angle to each other,

as can be seen in Figure 1, the viewer is looking at the combine images (125r and 125l) on the beam splitter where one image is reflected and the other is transmitted corresponding to a beam splitter so positioned relative to the two displays at the bisectrix of said angle to combine images from the displays whereby one image is transmitted by the beam splitter and the other image is reflected by the beam splitter to provide direct view of images from the displays, an improved "through-the-beam splitter" approach utilizes light polarization to separate left-eye and right-eye stereo images (column 4, lines 3-7) corresponding to such that the image can be separated based on polarization.

As for claim 2, Christie teaches liquid crystal display (LCD) panels (column 1, lines 61 and 62) (125r and 125l) corresponding to the displays are flat panel LCDs.

As for claim 3, Christie teach the two first and second images LCDs Fig.1 (125r and 125l) that are inherently identical corresponding to the LCDs are identical and the first image LCD (125r) is at 45 degrees away from the beam splitter and the second image LCD (125l) is at 45 degrees away from the beam splitter (Fig.1) corresponding to the polarization of the LCDs are at 45 degrees to the horizontal, an image from one LCD transmitted through the beam splitter for viewing and the image from the other LCD which is reflected from the beam splitter will have linear polarization at right angles.

As for claim 4, Christie teaches the foregoing embodiments require separate image displays, one for the left-eye image and one for the right-eye image (column 12, lines 36-38) corresponding to polarizers are used to separate the images for right and left eye.

As for claim 5, Christie teaches a light reflected by mirror 115l passes through a second focusing lens 120l, a second polarizer 122l oriented in a second polarization direction orthogonal to the first polarization direction (column 7, lines 4-7) corresponding to the polarizers are polarized lenses in eyeglass frames.

As for claim 6, Christie teaches the pattern rotates the first or second region to a first polarization direction but rotates the other region to a second polarization direction. The altered light then passes through an output polarizer (disposed between the tracking polarization pattern and the display) that passes only that portion of the pattern-modified composite image polarized in the first or second direction (column 5, lines 5-11) corresponding to the polarization is modified by adding quarter wave plates, respectively, an improved "through-the-beam splitter" approach utilizes light polarization to separate left-eye and right-eye stereo images (column 4, lines 3-7) corresponding to the light paths from the LCDs so that the images from the respective displays as viewed via the beam splitter are separated by right and left circular polarized light.

As for claim 7, Christie teaches the lens 120r representing a single quarter wave plate located between the beamsplitter (130) and the right eye of the viewer corresponding to circular polarization is created by a single quarter wave plate located between the beam splitter and the eye of a viewer.

As for claim 8, Christie teaches image LCD 125r displays a right-eye stereogram, while image LCD 125l displays a left-eye stereogram (column 7, lines 9-11) corresponding to a stereo pair makes up a selected region of the images from the displays.

As for claim 9, Christie teaches the image LCDs (125r and 125l), which are disposed at a right angle to each other (90 degrees) and are in the vertical plane corresponding to the displays are disposed at right angles and are in the vertical planes.

As for claim 10, Christie teaches an image LCD 125r for direct view through the beamsplitter is in the vertical plane and an image LCD 125l that is reflected in the beamsplitter is in the horizontal plane.

As for claims 12 and 13, Christie teaches image LCDs (125r and 125l) where one is reflected and the other transmitted the image to the viewer. It is inherent and well known in the art to invert the images from top to bottom and from left to right.

As for claims 15 and 18, Christie teaches a moving image may be presented by successively displaying each stereoscopic component of each successive image frame with sufficient rapidity to convey the illusion of motion (column 13, lines 18-21) corresponding to a field of sequential signal is displayed such that alternate fields are displayed on both displays so that each field is displayed for a full frame.

As for claim 16, Christie teaches an LCD display (125r and 125l) which are inherently including red, green, and blue color sub pixels corresponding to the displays are made up of red green and blue color sub pixels to form picture elements and/or arranged to overlay each other so as to minimize color halos and color fringes.

As for claim 17, Christie teaches the output polarizer of LCD 205r is polarized vertically while the output polarizer of LCD 205l is polarized horizontally (Fig.3) corresponding to the directional organization of providing data to color sub pixels in one

LCD is in one direction and the directional organization of providing data to color sub pixels in the other LCD is in the opposite direction.

As for claims 19-21, Christie teach image LCDs (125r and 125l) that are perpendicular to each other since they create a right angle and the light from image LCD 125r strikes and is reflected from a second beamsplitter 130 toward the viewer and it is inherent that it is mounted to something and also it is inherent for the beamsplitter to have a storage.

As for claim 22, Christie teaches light passing through an activated (or "on") pixel, however, is not altered in polarization and is therefore absorbed by the final polarizer (column 7, lines 48-50) corresponding to a light absorber for absorbing light from the beam splitter which is not directed to a viewer for viewing.

As for claim 23, Christie teaches the image LCDs (125r and 125l) and the beamsplitter 130 containing in a package (See figure 1).

As for claims 27 and 28, Christie teaches a controller 150 (see FIG. 1), which receives position data from a viewer-tracking system as described below, controls the pixels of liquid crystal element 162 (column 7, lines 59-62) corresponding to a data processing system for obtaining and organizing image data and presenting the image data for display and data processing system including a processor, a memory and connections to the respective display generators. It is inherent in a controller to include a data processing and a memory.

As for claim 32, Christie teaches means for optically separating the first and second images from the projected composite image and controlling their display such

that (i) the target zone receives light only from a selected one of the first and second images, (ii) regions outside the target zone receive light from the other of the first and second images, and (iii) the first and second polarized images are movable relative to each other (column 15, lines 24-31) corresponding to discriminating the respective images in the common light path using optical polarization.

As for claim 33, Christie teaches early three-dimensional film systems displayed left-eye and right-eye images in separate colors, which were directed to the appropriate eye by special glasses having lenses tinted with one or the other of these colors (column 1, lines 39-42) corresponding to the images are color images, each being composed of an assemblage of lines of different respective colors, and wherein the color image from one display is an arrangement in a one sequence and the color image from the other display is in an arrangement in the opposite sequence.

As for claim 35, Christie teaches Each of the sources emits non-visible light of a different wavelength, and a pair of cameras (of known locations and optical geometries) each equipped with a bandpass filter is focused on the viewer. One of the bandpass filters is tuned to the wavelength emitted by source 170, so this camera provides controller 150 with an image of the right side of the viewer's face; and the other bandpass filter is tuned to the wavelength emitted by the other source, the associated camera providing controller 150 with an image of the left side of the viewer's face (column 12, lines 24-33).

As for claim 36, Christie teaches a light passing through a right-eye window appears in view zone V.sub.r. The left-eye and right-eye windows may simply be

inverse patterns; that is, a first window passes light directed onto one of the viewer's eyes and blocks light directed everywhere else, while the other window passes light directed everywhere except where directed through the first window (column 12, lines 65-67) and (column 13,1-4) corresponding to inverting the image data for one of the images for presenting for viewing in substantially superposed relation to the other image.

As for claims 39 and 40, Christie teaches the left-eye and right-eye windows may simply be inverse patterns (see figure 1) and it is inherent in the art to be able to invert image data from top to bottom and from left and right corresponding to inverting comprising inverting from top to bottom and from left to right.

As for claims 43, 44, 49, 50, 52, and 53, Christie teaches the image LCDs (125r and 125l) which are in parallel to the beam splitter 130, wherein the polarizers 122r and 122l are linear polarizers, wherein one light is reflected by the beam splitter and the other light is transmitted along an optical path, the operation of this device is best understood with reference to conventional LCD displays. Such a display ordinarily comprises a thin layer of liquid crystal material sandwiched between two glass plates, each of which has an electrical conducting layer deposited thereon. When the inside surfaces of the glass plates have been properly treated, the molecules of the liquid crystal material are forced to align so as to rotate helically from one glass plate to the other. Light passing through this sandwich is forced to rotate its polarization in accordance with the rotated conformation of the liquid crystal molecules, this degree of

rotation often being 90.degree (column 7, lines 17-28) corresponding to the polarized light prior to reflection is rotated 90 degrees about the optical path.

As for claim 45, Christie teaches image LCDs (125r and 125l) that are inherently rectangle corresponding to the displays are flat panel displays having a generally rectangular shape and the direction of polarization for both displays is diagonal relative to such generally rectangular shape.

As for claims 46 and 48, Christie teaches Light from the image LCDs 205r, 205l is combined by a beamsplitter 207 that directs the light toward a projection lens or lens assembly 210. Lens 210 projects the composite image through a viewer-tracking polarizer 215 onto a display element 220, which presents a viewable image to the viewer (column 9, lines 15-20) corresponding to the beam splitter combines images from both displays to provide viewable overlapping images that respectively have crossed polarization.

As for claims 47, 51, and 54, Christie teaches the first polarizer preconditions the light so that only one polarization passes through the liquid crystal sandwich. When the polarized light passes through a pixel across which no voltage is applied (an "off" pixel), the polarization of the light rotates 90.degree. and, as a result, exits through the final polarizer. Light passing through an activated (or "on") pixel, however, is not altered in polarization and is therefore absorbed by the final polarizer. The LCD acts as a restrictive light valve with respect to a source of illumination on either side of the LCD, selectively passing or blocking the light in accordance with the pixel pattern (column 7, lines 43-53) corresponding to the polarization for both displays is circular.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 30 is rejected under 35 U.S.C. 102 (e) as being unpatentable over U.S. Patent # 5, 976,017 ("Omori et al.").

As for claim 30, Omori et al. teach a casing Fig.13 (150) where inside the casing is including displays 105a and 105b and a half-mirror or beam splitter for combining the screen images displayed on the LCD's 105a and 105b. As shown in fig.2 of the prior art, the casing 150 has an openable where a cover portion can be placed with hinges to get access to the stereoscopic-image game playing inside the casing which is interpreted by the examiner as corresponding to a pair of displays, a beam splitter, a storage package containing the displays and beam splitter, the storage package including a pair of cover portions and a hinge connecting the cover portions allowing the cover portions to be closed to contained in protected closed relation the displays and beam splitter, and to be opened to expose the displays and beam splitter in respective operative relation such that the beam splitter is so positioned relative to the two displays that one can be viewed directly through the beam splitter and the other can be viewed by reflected light from the beam splitter to present stereoscopic images for viewing .

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11, 14, and 29 is rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent # 6,593,957 ("Christie") in view of U.S. Patent # 5,421,589 ("Monroe").

As for claim 29, Christie teaches a first and second images Fig.1 (125r and 125l) corresponding to the display system. Accordingly, Christie teaches all the claimed limitations as recited in claim 29 with the exception of providing a software to invert.

However, Monroe teaches the inversion process is manipulated using software (e.g., digital video editor or computer). FIG. 2D illustrates the process for inverting Original Image 200 using software. Image Generator 202 provides Image 200 comprised of arrow 204 and text 206. Original Image 200 is transmitted to Image Inverter 228 via 226. Image Inverter 228 inverts Original Image 200 to produce Inverted Image 224 (column 10, lines 64-68 and column 11, lines 1-4) corresponding to the inversion of a software.

It would have been obvious to utilize the software to invert as taught by Monroe in the multiple-viewer auto-stereoscopic display systems disclosed by Christie because this would provide an interactive video whereby users sit opposite to each other and view the video and each other through a semi-transparent image generated in real-time through the use of a first surface reflection.

As for claim 11 and 14, Monroe teaches the graphical elements are in the resulting images are the inverse of the original image. For example, when player B views the arrow in the resulting image from the left to right, B will be scanning the arrow from the arrow's head to its base. However, as can be seen in B's monitor image, a scan of monitor image (i.e., as well as the original image) from left to right scans the arrow's base to its head (column 9, lines 1-13) corresponding to scanning a display from left to right and right to left; Player B's perspective is illustrated by viewing the Figure from the bottom of the figure toward the top of the figure while player A's perspective is from the top down. Looking at the figure from Player B's perspective, player B's resulting image is a reflection of player B's Monitor Image. The arrow in the monitor image is pointing from left to right, however the arrow in the resulting image is pointing from the players' right to the players' left. Similarly, the textual components in the resulting image are the inverse of the text in the monitor image (column 8, lines 51-60) which the examiner interpreted to as corresponding to scanning from top to bottom and bottom to top.

6. Claims 24-26 are rejected under 35 U.S.C. 103 (a) as being unpatentable over U.S. Patent # 6,693,957 ("Christie") in view of U.S. Patent # 5,976,017 ("Omori et al.").

As for claim 24, Christie teaches a first and second images Fig.1 (125r and 125l) corresponding to the display system. Accordingly, Christie teaches all the claimed limitations as recited in claim 24 with the exception of providing a package.

However, Omori et al. teach a casing containing the stereoscopic-image game playing for protecting from light Fig.2 (150) which the examiner interpreted as corresponding to package comprising cover portions coupled to a hinge and movable to contain in protected relation the displays and beam splitter and openable to provide access and use of the displays and beam splitter and it is inherent in a housing to have hinges which allows access to the inside of the housing.

It would have been obvious to utilize the casing as taught by Omori et al. in the multiple-viewer auto-stereoscopic displays systems disclosed by Christie because this would enable a plurality of players to obtain stereoscopic vision simultaneously.

As for claims 25 and 26, Omori et al. teach the casing Fig.2 (150) has a cover portion which the examiner interpreted to be perpendicular to the planes with the beam splitter therebetween and in parallel relation in a common plane

### **Conclusion**

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean Lesperance whose telephone number is (703) 308-6413. The examiner can normally be reached on from Monday to Friday between 8:00AM and 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (703) 305-4709.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Application/Control Number: 09/611,541  
Art Unit: 2674

Page 14

Washington, D.C. 20231

**or faxed to:**

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal  
Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or  
proceeding should be directed to the technology Center 2600 Customer Service Office  
whose telephone number is (703) 306-0377.

Jean Lesperance



Art unit 2674

Date 9-27-2003



RICHARD HJERPE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600